



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,472	05/07/2004	Ramachandra Divakaruni	FIS920030392	3471
30449	7590	09/01/2004	EXAMINER	
SCHMEISER, OLSEN + WATTS SUITE 201 3 LEAR JET LATHAM, NY 12033			TSAI, H JEY	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 09/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/709,472	Applicant(s) DIVAKARUNI ET AL.	
	Examiner H.Jey Tsai	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 1957 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6-10, 12-13 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tews et al. 6,599,798.

The reference(s) teach the features :

Tews discloses a method of forming a buried dielectric collar around a trench, comprising:

forming a trench in a substrate, fig. 2+, col. 3, lines 60+,

forming a multilayer coating 20/21/24 on sidewalls and a bottom of the trench,

removing a continuous band of multilayer coating from the sidewalls a fixed distance from a top of said trench to expose a continuous band of substrate in the sidewalls of said trench,

etching, in the exposed trench extending into the trench,

filling the lateral trench with a dielectric material to band of substrate, a lateral substrate in the sidewalls of form a buried dielectric collar,

Art Unit: 2812

buried dielectric collar extends continuously around the trench (recess formed around the trench) , col. 4, lines 31+ and fig. 5,

buried dielectric collar extends into said trench.

Claims 1-3, 6-10, 12-13 are rejected under 35 U.S.C. § 102(b) as being anticipated by Mandelman et al. 6,373,086.

The reference(s) teach the features :

Mandelman et al. discloses a method of forming a buried dielectric collar around a trench, comprising:

forming a trench in a substrate, fig.14C, col. 7, lines 21+,

forming a multilayer coating 44/52/56 on sidewalls and a bottom of the trench,

removing a continuous band of multilayer coating from the sidewalls a fixed distance from a top of said trench to expose a continuous band of substrate in the sidewalls of said trench,

etching, in the exposed trench extending into the trench, fig. 14e or fig.15d,

filling the lateral trench 30 with a dielectric material to band of substrate, a lateral substrate in the sidewalls of form a buried dielectric collar, fig. 15F,

buried dielectric collar extends continuously around the trench (recess formed around the trench) ,

buried dielectric collar extends into said trench,

a multiplayer coating of oxide/nitride and polysilicon layer,

filling the trench with polysilicon layer 70.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5, 11 and 14-20 are rejected under 35 U.S.C 103 as being unpatentable over Tews et al. as applied to claims 1-3, 6-10, 12-13 above, and further in view of Mandelman et al. 6,373,086.

The difference between the references applied above and the instant claim(s) is: Tews et al. teaches forming a collar in the trench with an oxide/nitride multiplayer coating but does not teaches using a resist layer and oxide/nitride and a polysilicon layer as a multiplayer coating. However, Mandelman et al. teaches at col. 7, lines 21+ and figs. 14c that using resist layer in the trench and forming a oxide/nitride/polysilicon multiplayer on the sidewall of the trench.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above references' teachings with a resist layer formed in the trench and using a multiplayer coating as taught by Mandelman et al. because resist layer and multiplayer coating is used as a mask for lateral etching the sidewall of the trench.

Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the Group customer service whose telephone number is (703) 308-4357.

Art Unit: 2812

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679.

The fax phone number for this Group is (703) 872-9306.

hjt

8/30/04

A handwritten signature in black ink, appearing to read 'H. Jey Tsai', with a stylized flourish at the end.

H. Jey Tsai
Primary Examiner
Patent Examining Group 2800